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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/629,882

07/28/2003

John C. Devine

MER103

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20482

7590

10/06/2006

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EXAMINER

NGUYEN, HANH N

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,882	DEVINE, JOHN C.	
	Examiner	Art Unit	
	Nguyen N. Hanh	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

1. In view of amendments, the Examiner withdraws part of the objections to the drawings. The Examiner also withdraws the rejection under 35 U.S.C 112, to claims 1-9. The rejection of claim 10 is moot in view of cancellation of claim 10.

Drawings

2. The drawings are objected to because of the following informalities: the profile of the interpole spacers 94 in Fig. 4 does not match the profile of spacer 94 in Fig. 6 because the interpole spacers are attached to the rotor sleeve 6 between the permanent magnets 4, the profile of the spacers should have a curve shape and located around the rotor sleeve, the spacers can not have a rectangular shape and located at a random location as shown in Fig. 4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either

“Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “stator housing carrying permanent magnets” in claim 1 must be shown or the features canceled from the claims (it is noted that none of the drawings shows a permanent magnet mounted on the stator housing 2, only stator coil 9 mounted on stator housing 2 and Fig. 2 only show permanent magnet 4 mounted on the shaft 6). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The specification has not been checked to the extend necessary to determine the presence of all possible minor errors. Applicant's corporation is requested in correcting any errors of which Applicant may be aware in the specification.

Claim Objections

5. Claim 1 is objected to because of there is no antecedent basis in the drawings, in the specification for: "stator housing carrying permanent magnets", the Examiner interprets the limitation in claim 1 as "stator housing carrying stator windings".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glauning (U.S. Patent No. 6,087,744) in view of Staub et al. (U.S. Patent No. 5,223,757).

Referring to claim 1, Glauning teaches in a permanent magnet generator (figure 2), the combination of: a generator housing (36); a stator housing (40) within said generator housing, said stator housing carrying a stator winding (10) and having an outer surface being fitted with external fins (the meander-shaped grooves, line 14 – 18,

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column 3), said fins surrounded by a sleeve (cooling medium) extending generally axially from front to rear along said stator housing external surface; a stator winding (10) within said stator housing; a hollow shaft (4) rotatably mounted within said stator housing, said shaft having an air channel communicating therethrough an inlet end and an outlet end (the arrow air flowing from inlet at end shaft 2 and flowing out from outlet 22, or 32 in figure 2); a fan (28) mounted on said hollow shaft; means (motor) for rotating said shaft; whereby said stator housing is fit within said generator housing such that there is a space (cooling passage 38) between said housings and when said generator is in operation, said fan draws cooling air forward through in said rotor shaft (4) and ejects said air through said space between said stator housing and said generator housing over said stator housing external fins into the atmosphere (the arrows in figure 2, and flowing out through cooling passage medium 32, 38, 22), and thereby cools said generator (line 29 – 36 column 3). Glauning does not teach a cylindrical aluminum sleeve mounted inside the hollow shaft.

However, Staub teaches a motor cooling using a liquid cooled rotor (figure 1) having a hollow shaft (7) with a cylindrical aluminum sleeve (27) mounted inside the hollow shaft for good heat transfer through the shaft.

Thus, it would have been obvious to one having skill in the art at the time the invention was made to modify Glauning's generator with a cylindrical aluminum sleeve mounted inside the hollow shaft as taught by Staub. Doing so would improve heat removal from the machine.

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Regarding claim 10, it is noted that all limitations of the claimed invention has been fulfilled by Glauning and Staub et al. as in claim 1.

7. Claims 2, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Glauning and Staub as applied to claim 1 above, and further in view of Halimi et al. (U.S. Patent No. 5,605,045).

Regarding claim 2, the combination of Glauning and Staub teaches the claimed invention, except for the added limitation of the generator comprising an air filter.

Halimi teaches in his invention a cooling system with the generator having an air filter to remove the larger physical contaminants (line 36- 37 column 2).

Thus, it would have been obvious to one having skill in the art at the time the invention was made to modify the generator with an air filter as taught by Halimi. Doing so would prevent the contaminants coming to the generator.

Regarding claim 4, Halimi teaches the generator comprising permanent magnets (62,64,66, 68) mounted on said shaft (figure 2).

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Glauning, Staub, and Halimi as applied to claim 2 above, and further in view of Rakow (U.S. Patent No. 4,358,303).

Regarding claim 3, the combination teaches the claimed invention, except for the added limitation of the air filter is self-cleaning.

Rakow teaches an alternator having a self-cleaning air filter (see claim 1) for keeping the cooling air passages of alternators free of dirt and debris.

Thus, it would have been obvious to one having skill in the art at the time the invention was made to modify the air filter in the generator with a self-cleaning air filter as taught by Rakow. Doing so would keep the alternator free of dirt and debris.

9. Claims 5, 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Glauning and Staub as applied to claim 1 above, and further in view of Nilson (U.S. Patent No. 6,661,145 B1).

Regarding claims 5 and 7, the combination substantially teaches the claimed invention, except for the added limitation of the magnets are held in place by a plurality of magnet retention rings (or metal ring as recited in claim 5) that are configured to secure said magnets to said shaft, said retention rings being fitted around said shaft and threadably connected to said shaft.

However, Nilson teaches a rotor for a high speed permanent magnet motor having permanent magnets (21) mounted on a shaft (20) by a plurality of magnet retention rings (24, 25) that are configured to secure said magnets to said shaft, said retention rings being fitted around said shaft and connected to said shaft (by nut 28 through thread 29).

Thus, it would be obvious for one having skill in the art at the time the invention was made to modify the generator with magnet retention rings as taught by Nilson. Doing so would secure the magnets to the shaft and obtain the highest possible pre-tension of the magnets.

Regarding claim 8, Nilson teaches the generator wherein said magnets (21) include a plurality of permanent magnets arranged in a plurality of rows that extend

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around the circumference of said shaft (figure 4) and said magnets are further held in place by at least one magnet spacer ring (23) that is configured to fit between two of said rows and secure said magnets to said shaft, and said spacer ring being fitted around said shaft (figure 2).

Regarding claim 9, Nilson teaches the generator wherein said magnets include a plurality of permanent magnets (21) arranged in rows that extent around the circumference of said shaft, said magnets being placed such that the opposite poles of adjoining magnets face each other the generator further comprising interpole spacers (23) placed between adjoining magnets; and said interpole spacers being threaded connected to said shaft (figure 4).

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Glauning, Staub, and Nilson and further in view of Julien.

Regarding claim 6, the combination of Glauning, Staub, and Nilson substantially teaches the claimed invention, except for the added limitation of the metal ring is Nitinol 60.

However, Julien discloses an improved protective coating on metal component using Nitinol 60 (Col. 5, lines 55-58) for the purpose of providing hard wear surface.

Thus, it would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Glauning, Staub, and Nilson by using Nitinol 60 for the shaped metal alloy as taught by Julien for the purpose of providing hard wear surface.

Response to Arguments

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11. Applicant's arguments filed 7/20/06 have been fully considered but they are not persuasive. The applicant's argument is on the ground that "the reference the Examiner relies on, Glauning, is in non-analog area because Applicant's claimed device concerns cooling of rare earth magnets used in a permanent magnet device. Moreover, the secondary reference is a motor, not a generator". The Examiner respectfully disagrees with the Applicant because the claimed directed to the **"stator housing carrying permanent magnet** and having an outer surface being fitted with external fins", while the drawings and the specification shows the housing (2) carrying stator windings (9). Therefore the Examiner interprets the limitation as "stator housing carrying stator windings" (please refer to claim objection section), and the structure disclosed by Glauning, modified by Staub et al. satisfied all limitations of the claimed invention as recited in claim 1. The structure of Glauning does not show a rotor with permanent magnet, however, that feature was not recited on the rejected claim 1. In response to Applicant's arguments that the secondary directed to a motor, not a generator, therefore it is not obvious to combine the references. The Examiner respectfully submitted that both the motor and the generator are electric machine. The motor is an electric machine to convert electric energy to mechanical energy and the generator is an electric machine to convert mechanical energy to electrical energy, they have the same structure but works in opposite way and the motor can be converted easily to a generator and a generator can be converted to a motor (US 6,700,242 and US 6,897,587). For the reasons explained above, the rejection is still deemed proper.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Information on How to Contact USPTO

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (571) 272-2031. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg, can be reached on (571) 272-2044. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

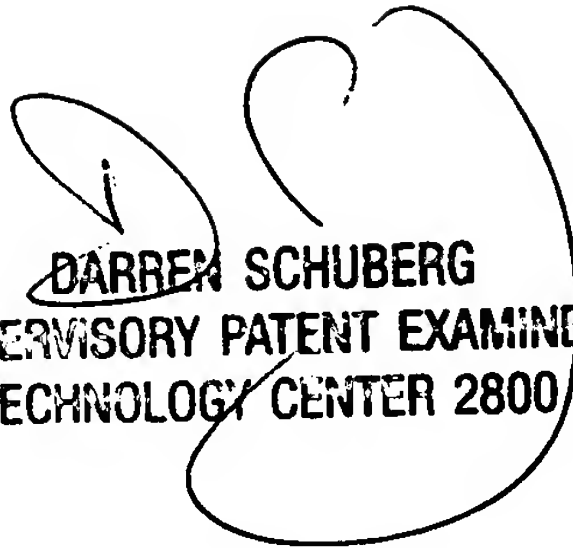
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

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HNN

September 22, 2006


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